

That Sinking Feeling

Canada's Submarine Program Springs a Leak

Michael Byers and Stewart Webb





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ABOUT THE AUTHORS

Michael Byers holds the Canada Research Chair in Global Politics and International Law at the University of British Columbia. He is a project leader with ArcticNet, a federally funded consortium of scientists from 27 Canadian universities, and the author of the forthcoming book *International Law and the Arctic* (Cambridge University Press).

Stewart Webb is a Visiting Research Fellow with the Rideau Institute and a Research Associate with the Salt Spring Forum. He holds a Bachelor's degree in Political Science from Acadia University and a Master's degree in Security Studies from Aberystwyth University.

ABBREVIATIONS

- A/OPS Arctic/Offshore Patrol Ship
- COTS Commercial Off the Shelf Technologies
- CRS Chief Review Services
- CSMG Canadian Submarine Management Group
- DND Department of National Defence
- EDWP Extended Docking Work Period
- JUSTAS Joint Uninhabited Surveillance and Target Acquisition System
- MoD UK Ministry of Defence
- NSPS National Shipbuilding Procurement Strategy
- PEM Polymer Electrolyte Membrane
- RCN Royal Canadian Navy
- SCLE Submarine Capability Life-Extension
- SSE Submerged Signal Ejector
- SSK Diesel-Electric Attack Submarine
- SSN Nuclear Powered Attack Submarine
- UAV Unmanned Aerial Vehicle
- UUV Unmanned Underwater Vehicle
- VISSC Victoria-class In-service Support Contract

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Introduction

“My God, it’s a sad tale, isn’t it? ‘Buyer beware’ should have been painted on the sides of these submarines.”

— *British MP Mike Hancock*¹

“The argument[s] made for Canada and submarines are more driven by naval images than they are by really strategic requirements relative to available resources.”

— *Professor James Fergusson, University of Manitoba*²

Instead of submarines, we need to beef up the coast guard and improve aerial reconnaissance and surveillance of our coastal waters.

— *Professor Fen Hampson, Carleton University*³

IN JUNE 2010, the Harper government announced the National Shipbuilding Procurement Strategy (NSPS), a long-term plan to rebuild Canada’s naval and coast guard fleets.⁴ The government foresees spending \$33 billion over the next three decades on 2–3 Joint Support Ships, 6–8 Arctic/Offshore Patrol Ships, and 15 Surface Combatant Ships for the Royal Canadian Navy (RCN).⁵ But nowhere in that plan is there any mention of one particular, significant, readily identifiable and probably imminent procurement: namely, the replacement of Canada’s troubled Victoria-class (formerly Upholder-class) submarines.

The four submarines — HMCS *Chicoutimi*, *Victoria*, *Corner Brook* and *Windsor* — were launched between 1990 and 1993 and are now 20–23 years

old.⁶ The RCN predicts that the lifespan of the submarines extends to 2030.⁷ In 2011, Greg Weston of the CBC made a less optimistic projection: “[B]y the time the whole fleet is in active service for the first time in 2016, the submarines will already be almost 30 years old with only perhaps 10 years of life left in them.”⁸

Weston may have been right: A more realistic decommissioning date could indeed be 2026. As a point of comparison, Canada’s Halifax-class frigates were launched between 1992 and 1996.⁹ Their life expectancy, according to the Department of National Defence’s Chief Review Service (CRS), “will range from 30 to 42 years with an average of 35 years, [five years] longer than the original expected 30 years.”¹⁰ This means the average life expectancy of the frigate fleet extends to between 2027 and 2031 — almost the same period framed by Weston and the RCN for the Victoria-class submarines.

To be fair, it has been suggested that the lifespan of the submarines might be stretched beyond 30 years (perhaps because the Upholder-class were little used by the British Royal Navy before they were acquired by Canada and renamed the Victoria-class).¹¹ But as this report demonstrates, there are equally good reasons to suspect that the lifespan might, in fact, be considerably shorter than 30 years. These factors include poor construction, a long period of storage in salt water, and a series of accidents both before and after Canada acquired them.

Again, a plan to replace the frigates is in the NSPS, but submarines are not mentioned.¹² The omission is a matter of no small importance. Seven years ago, the Senate Committee on National Security and Defence stated: “The Victoria-class submarines are approaching their mid-life point. As soon as the submarines are fully operationally ready, planning for their mid-life refits and eventual replacement should begin.”¹³

There are three possible explanations for the omission of submarines from the NSPS:

1. A still-secret decision has been made to acquire new submarines to replace the Victoria-class;
2. A still-secret decision has been made to terminate Canada’s submarine program when the Victoria-class submarines reach the end of their service lives;
3. The Harper government is badly mismanaging this file and, by failing to make a plan, condemning Canada’s submarine program to death through neglect and obsolescence rather than design.

Whatever the explanation, the Harper government must be aware of the hazards that submarine procurements have created for previous governments, both Conservative and Liberal. Indeed, there is a clear connection between those earlier problems and the situation in which the government currently finds itself.

Failed Procurement of Nuclear-Powered Submarines

IN THE 1960S, Canada had procured three diesel-electric Oberon-class submarines from the United Kingdom.¹⁴ The Oberon class, which was also used by the Australian, Brazilian and Chilean navies, was designed specifically for “silent running” and was considered the quietest submarine type in the world.¹⁵

Two decades later, in 1987, the Mulroney government announced plans to replace the Oberon-class with 10–12 nuclear-powered attack submarines (SSNs).¹⁶ The reasoning was that nuclear-powered submarines, which can remain submerged for long periods of time, would be able to operate under the Arctic sea ice. This was something that diesel-electric submarines could not do, because their diesel engines required an ongoing source of air to generate power — some of which was stored in batteries for when the submarines dived.¹⁷

The plan for SSNs came at a time of heightened concern over Arctic sovereignty, following the voyage of the U.S. Coast Guard icebreaker *Polar Sea* through the Northwest Passage in 1985.¹⁸ It coincided with the plan to build the *Polar-8*, a powerful new icebreaker for the Canadian Coast Guard.¹⁹ Concerns about Soviet submarines surreptitiously roaming the Arctic likely also played a role: in 2011, it emerged publicly that Soviet-era charts of Canada’s

Arctic waters were remarkably detailed, suggesting that Soviet submarines were indeed frequent visitors there.²⁰

The Mulroney government went so far as to tentatively select the French-made nuclear-powered Rubis-class submarine.²¹ The selection was not without problems. The French insisted that the first batch of submarines be built in France, with reduced industrial regional benefits to Canada.²² Nevertheless, the \$10 billion cost (in 1987 dollars) of the SSNs was considered justified, in part, by the fact that the procurement would cost roughly the same over a 20-year period as a combination of new diesel-electric submarines plus an additional batch of Halifax-class frigates.²³

However, the Cold War was winding down and the Mulroney government was running multi-billion-dollar deficits.²⁴ These two factors led to a marked shift in public opinion. In 1987, polls showed that 50 percent of Canadians approved the purchase of SSNs, with just 37 percent opposing.²⁵ By 1989, opposition to the purchase had almost doubled, to 71 percent.²⁶

In addition, the United States was distinctly unenthusiastic about Canada having nuclear-powered submarines. Canada had recently cut back its NATO commitments, and the Americans were sceptical as to whether the Canadian Department of National Defence (DND) fully appreciated the cost of operating a nuclear fleet.²⁷ The Americans were also of the view that it was dangerous enough for their submarines to be playing cat-and-mouse with Soviet submarines in the Arctic, “without neophyte Canadians getting involved.”²⁸

And so, in 1989, shortly after the election of a second Mulroney government, the plan to replace the Oberon class with SSNs was scrapped.²⁹

Victoria-Class Fiasco

Bridging the Submarine Gap

The collapse of the SSN procurement in 1989 left Canada facing a so-called “submarine gap,” in other words, a period without operational submarines.³⁰ And so, in the mid-1990s, with fiscal restraint continuing to dominate government budgeting, the Navy was quick to leap on what seemed to be a truly fortuitous opportunity.

Between 1986 and 1993, the British government had built four Upholder-class diesel-electric submarines.³¹ It was not an easy procurement, with a series of problems pushing up costs and ultimately prompting a review by the British House of Commons.³² For example, during the construction of the first vessel, HMS *Unseen* (now HMCS *Victoria*), it was discovered that the torpedo tube slide-valve, which controls the torpedo tube doors, could malfunction and allow the inner door to be opened while the outer door was ajar — thereby allowing water to flood into the submarine.³³ The HMS *Unseen* first went to sea unable to fire its main weapons, with the outer torpedo tube doors having been welded shut for safety reasons.³⁴

The second submarine, HMS *Upholder* (now HMCS *Chicoutimi*), suffered a loss of power during an “emergency reversal” test due to malfunctioning main-motor control circuitry.³⁵ The Paxman Valenta diesel engines, which are still used in the submarines, were intended for railroad locomotives and not for the rapid stops and starts required of submarines during manoeuvres or combat.³⁶



Upholder Class in Long Term Storage

These problems contributed to the British government's decision to build an entirely nuclear-powered fleet and sell the four Upholder-class submarines.³⁷

The \$750 million price tag for the used submarines compared very favourably with an estimated cost of \$3–\$5 billion for four brand-new vessels.³⁸ As then Defence Minister Art Eggleton said: “We got them at a quarter of the cost it would have cost to build new ones.... We wouldn't have had the money to build new ones.”³⁹ And so the Submarine Capability Life-Extension (SCLE) project was born, with an \$812 million capital budget that, in addition to the purchase price of the submarines, included some funding for minor alterations to the vessels, and new on-shore infrastructure.⁴⁰



HMCS Chicoutimi After Fire

Unfortunately, the apparent bargain quickly became a costly fiasco. It turned out the submarines were not particularly well constructed, perhaps because the state-owned shipyard charged with their construction was privatized halfway through the build.⁴¹ Then, the submarines languished in salt water for four years awaiting a buyer, and another two to six years before Canada took possession of them.⁴² The HMS *Upholder* (now HMCS *Chicoutimi*) spent a total of nine years in long-term saltwater storage, while the other vessels spent between four and six years.⁴³ In 2005, the Canadian House of Commons Standing Committee on National Defence and Veterans Affairs reported that, “except for the electrical power fed from shore to demonstrate the electronic systems to prospective customers, the vessels were just soaking up the sun and the salt water.”⁴⁴ During this time, the already inferior vessels suffered serious corrosion, necessitating the repairs and refits that have contributed to the ongoing delays in entering RCN service.

The old Oberon-class submarines were finally decommissioned between 1998 and 2000.⁴⁵ Although the first of the (now) Victoria-class submarines, HMCS *Victoria*, was commissioned into the Canadian Navy in December 2000,

TABLE 1 Sea-Days Accumulated by the Upholder/Victoria-Class Fleet

| Submarine | Service With the RN | Days at Sea | Service With the RCN | Days at Sea |
|---------------------------|--------------------------|-------------|---------------------------|-------------------------------|
| HMS Upholder (Chicoutimi) | Dec 1990–July 1994 | 370 | Oct 2004–Present | 0 |
| HMS Unseen (Victoria) | July 1991–July 1994 | 269 | Dec 2000–Present | 174 |
| HMS Ursula (Corner Brook) | Jan 1993–July 1994 | 199 | Mar 2003–Present | 463 |
| HMS Unicorn (Windsor) | Nov 1993–Oct 1994 | 239 | June 2003–Present | 146 |
| | Total RN Service: | 1077 | Total RCN Service: | 783 (RCN reports 1131) |

technically avoiding a “submarine gap,” the other three Victoria-class vessels did not enter Canadian service until 2003–04.⁴⁶ Moreover, an ongoing series of accidents and mechanical problems has meant that, for the past 13 years, Canada has sometimes had none and has never had more than two submarines in operational condition.

Accidents and Mechanical Problems

Although we know little about the problems the British encountered during the construction of the submarines, and during their four years of service in the Royal Navy, we know more about the serious problems that occurred after Canada purchased them.

In 2002, during sea trials off of Scotland, HMCS *Corner Brook* took on 1500 litres of seawater because of a malfunctioning submerged signal ejector (SSE).⁴⁷ SSEs are used to deploy decoys (i.e., countermeasures against torpedoes) while submerged.

Also in 2002, a dent was discovered in the hull of HMCS *Victoria* that required repairs costing an estimated \$400,000.⁴⁸ That same year, the same submarine experienced problems with its cooling system when travelling through the Panama Canal en route to British Columbia.⁴⁹

In 2004, a fire broke out on HMCS *Chicoutimi* while the submarine was in transit to Canada, causing one death and numerous injuries. The cause was seawater infiltration through an open hatch, leading to an electrical short.⁵⁰ However, the water was only able to cause the short because the wiring had just “one layer of waterproof sealant instead of the three layers that British navy specifications required.”⁵¹ The correct number of layers of sealant had been applied in the other three vessels during their construction. Two years later, in 2006, DND indicated that repairs to HMCS *Chicou-*

timi would not occur until 2010 and that the submarine would not be operational until 2012.⁵² Today, HMCS *Chicoutimi* is still in deep maintenance, and is now expected to enter service sometime later this year.⁵³

According to military documents obtained by the *Halifax Chronicle Herald*, 2004 was also the year when “catastrophic damage” was done to the electrical components of “certain onboard filters and power supply units” on-board HMCS *Victoria*, the first of the four submarines to enter Canadian service. As the newspaper reported: “The navy had a new \$1-million piece of equipment that was supposed to supply the sub with direct-current power while it was at dockside”; instead, it destroyed many of the submarine’s electrical parts. After the accident, the Navy spent “about \$200,000 to buy old technology that mirrors what the sub’s British builders used” — equipment that one of the Navy’s own “electrical technologists” said “probably goes back to the ’60s.”⁵⁴ The ship subsequently spent six years, from 2005 to 2011, undergoing repairs in a dry dock at Esquimalt, BC.⁵⁵

In June 2011, HMCS *Corner Brook* struck bottom during an exercise off of Vancouver Island. The RCN later established that the accident was the result of human error.⁵⁶ The damage to the submarine was extensive and it did not return to sea until December 2012.⁵⁷

Also in 2011, the Canadian Press reported that the diving depth of HMCS *Windsor* had been restricted due to rust damage on the hull, damage that DND has chosen not to fix because of the cost and delay this would entail.⁵⁸

The next year, HMCS *Windsor* completed a five-year-long refit that was initially scheduled to take two years.⁵⁹ Numerous problems were discovered during the course of the refit. According to documents obtained by the CBC: “It appears that every system...has major problems...including bad welds in the hull, broken torpedo tubes, a faulty rudder and tiles on the side of the sub that continually fall off.”⁶⁰ Not surprising, the refit ran far over budget: in 2010 alone the Navy spent \$28 million more on the vessel than the \$17 million allocated.⁶¹

Then, in December 2012, a defect was found in one of the same vessel’s two diesel engines, which resulted in the submarine having to operate on just one engine.⁶² According to DND, HMCS *Windsor* “will continue to conduct local operations at sea to train submariners but will have some temporary restrictions on the range and endurance of her operations” until the engine is replaced “during a pre-planned work period scheduled for late 2013” that “will delay her achievement of full operational status by a few months.”⁶³ However, the CBC reported that as a result of the defect the ves-



HMCS Corner Brook With Damage From Grounding

sel's diving depth had been "severely restricted and the navy has been forced to withdraw the sub from planned exercises off the southern U.S. coast."⁶⁴

Another challenge is a shortage or lack of spare parts. As Commander R.E. Bush, the project director for the Victoria-class program, explained in 2005, "many of the original equipment manufacturers either no longer manufacture the equipment, or have moved on to other designs."⁶⁵ According to a former submariner, at one point HMCS *Chicoutimi* was cannibalized in order to provide replacement parts for HMCS *Victoria*.⁶⁶

According to the RCN, the four-vessel Victoria-class fleet has accumulated a total of just 1131 days at sea in the decade since 2003.⁶⁷ This is about the same number of sea-days as the same four submarines accumulated during their four years of service in the Royal Navy.⁶⁸

When the Tail Wags the Dog: Converting British-Made Submarines to Fit U.S.-Made Torpedoes

It was not until March 2012 that HMCS *Victoria* fired the first torpedo of Canada's Victoria-class fleet, fully 12 years after that submarine was commissioned into Canadian service.⁶⁹ Part of the reason for the delay was a decision to modify the torpedo tubes and replace the torpedo fire control mechanisms so that the vessels could fire the U.S.-made MK-48 torpedoes that Canada had in stock, rather than the British-made Spearfish torpedoes the British-made vessels were designed to fire.⁷⁰ The Canadian government also spent \$120 million on upgrade kits for the 36 U.S.-made MK-48 torpedoes in its possession.⁷¹

One consequence of the changes is that the four Victoria-class submarines can no longer fire Harpoon missiles, a long-range U.S.-made anti-ship weapon that is extremely popular in other navies and is, in fact, carried by Canada's Halifax-class frigates.⁷² The decision to reduce the versatility of the submarines is perplexing, to say the least. It cannot even be explained on cost-savings grounds, since it must have cost more to make the changes to the submarines than it would have cost to purchase the appropriate British-made torpedoes.⁷³

No User's Manual Provided

Canada's naval engineers have also been frustrated by the inability of the British government to transfer the intellectual property rights associated with the design of the Upholder/Victoria-class submarines. This is because the shipyard that made the submarines was privatized just a month after construction began, and the intellectual property was transferred to the new company, VSEL.⁷⁴ The British government has the right to use the information for its own purposes, but not to sell or give it to Canada. As DND's Chief Review Services (CRS) explained:

It was thought that all intellectual property would be acquired as part of the main contract with MOD UK [British Ministry of Defence] for the Victoria Class acquisition. However, the contract did specify that a portion of the \$36M technical data package would be categorized as 'information only', thereby preventing the CF [Canadian Forces] from conducting repairs, maintenance, refit, overhaul and manufacturing work. As well, the contract specifies that the technical data for equipments/subsystems do not contain the details needed to

perform repairs and overhaul (R&O). This limitation was the result of the original UK maintenance concept that outsourced the R&O function to the OEM [Original Equipment Manufacturer]. The Project office estimates that...[Censored] will be required to procure the necessary intellectual property rights.⁷⁵

To clarify the last sentence: The Canadian “Project office” produced an estimate of how much it would cost to secure the intellectual property rights, but the amount was censored in the CRS report and has never been made public.⁷⁶ It would certainly not have been included in the original procurement budget.

Cost Overruns

As a result of the mechanical problems, the Canadian government requested compensation from the British government in both 2002 and 2004.⁷⁷ No compensation was forthcoming, however, though the “cost of the final submarine was reduced by £2 [million] as an act of good faith and without liability.”⁷⁸ The reduction, equal to about \$3 million, amounted to about 0.4 percent of the purchase agreement.

Of course, the purchase agreement itself represents only part of the procurement cost. With refits, repairs, other modifications and accidents, the total cost of the submarines has escalated far beyond the \$897 million originally budgeted.

The most notable escalation occurred in June 2008 when the Harper government awarded the “Victoria-class in-service support contract” (VISSC) to the Canadian Submarine Management Group (CSMG), a subsidiary of British-based defence contractor Babcock International Group PLC.⁷⁹ The contract is worth up to \$1.5 billion over 15 years.⁸⁰

The work being done under the VISSC includes maintenance, repairs and systems upgrades. HMCS *Chicoutimi* was the first submarine to undergo the Extended Docking Work Period (EDWP), which in that case – according to Babcock International – involved

A large system surveillance package (part of the survey and assessment activity to identify the emergent work package normally associated with a complex refit programme such as this); battery change; propulsion plant overhauls; weapon handling and launch system overhaul; fire damage repairs including a complete rebuild of the communications room; and replacement

of 65% of the hull tiles; as well as 52 Engineering Changes (EC), or alterations and additions, with 16 further ECs being considered subject to approval.⁸¹

In short, the purpose of the VISSC is to refit the submarines to meet operational requirements, and to maintain them once they are fit for service.

The costs and delays associated with the submarine refits continue to escalate. As mentioned above, HMCS *Windsor* recently finished a five-year-long refit that initially was supposed to take two years. The refit cost a total of \$209 million,⁸² and in 2010 alone, the Navy spent \$45 million on the vessel — \$28 million more than the \$17 million it had budgeted for that year.⁸³

The Harper Government Bears Some Responsibility for the Victoria-Class Fiasco

Although the Chrétien government bears responsibility for purchasing the Victoria-class submarines, the Harper government took on just as much responsibility in 2008 when, instead of scrapping the submarines (and perhaps starting over), it awarded the \$1.5 billion VISSC to Babcock International.⁸⁴ It thus committed Canadian taxpayers to a continuation of an already failing procurement, when it should have been evident that the Victoria-class submarines were badly flawed — partly because of their lengthy storage in salt water. Moreover, the submarines were by that point between 15 and 19 years old — meaning that the most one could hope for from the submarines, after their refits, was a single decade of service.

The 2008 decision to spend an additional \$1.5 billion is all the more perplexing when one considers that, for the same amount of money, the Harper government could have procured 3–4 brand new diesel-electric submarines, based on proven designs from France, Germany or Sweden. These options are explained in more detail below.

Perhaps recognizing its own complicity in the fiasco, the Harper government has had difficulty maintaining a consistent position on the Victoria-class submarines. In September 2011, Defence Minister Peter MacKay's office stated: "Our Victoria-class submarines have provided good service as part of the Royal Canadian Navy's fleet. They have participated in a wide range of domestic and international operations."⁸⁵ But just a few months later, MacKay himself said the submarine fleet has a "spotty" history.⁸⁶

Does Canada Really Need Submarines?

IN DECEMBER 2012, John Ivison of the *National Post* reported that DND was concerned the Harper government might terminate Canada's submarine program for cost-savings reasons.⁸⁷ He also reported that: "Before buying the cut-price British subs, the Liberal government considered getting out of the submarine business altogether – something the Danes have more recently decided to do, instead spending the money on surface ships with ice capability."⁸⁸

During the Cold War, Canada's submarines were generally regarded as having a primary role of "area-denial". But as mentioned above, Canada has managed for the past 13 years with often none and never more than two submarines in service. This indicates that submarines have not been considered essential and, unless something fundamental changes, will not be required – at least for any task that cannot be fulfilled by surface or air units.

Canada's submarines are currently used to provide surveillance in support of the Coast Guard and the RCMP, and to provide training as targets for U.S. anti-submarine operations. In the following section, we evaluate the arguments advanced in favour of continuing to operate submarines for these two roles. We then examine a number of other arguments that have been or could be advanced for a continued submarine capability, namely: for Arctic operations; for the purposes of participating in "water space man-

agement” and intelligence sharing with NATO allies; and because of the potential risk of armed conflict in the Pacific Ocean.

Surveillance and Law Enforcement

In its 2001 strategy document *Leadmark*, DND stated that submarines “quite literally have brought a new dimension to such sovereignty activities as fisheries patrols and counter-drug operations, being able to approach violators unobserved.”⁸⁹ Yet the contribution of the submarines is limited to provision of surveillance, because they are unsuitable for interdicting vessels. Interdictions are best done by surface vessels or helicopters.

Today, DND states that submarines are tasked to “gather evidence for use in the prosecution of fisheries violators, polluters, and narcotics smugglers.”⁹⁰ It cites the example of HMCS *Corner Brook* providing surveillance in U.S.-led narcotics operations.⁹¹ DND also suggests that Canada’s submarine capability had a deterrent effect on Spanish fishing boats during the “Turbot Crisis” of 1995 as well as on “American fishing boats operating in disputed waters on Georges Bank.”⁹² Presumably, the deterrence involved the threat of being detected, rather than being sunk.

In 2009, J. Matthew Gillis wrote:

Yet while submarines have the endurance and sensor radius to patrol the long coasts of Canada, it is questionable whether they are Canada’s best patrol assets. [A] CP-140 Aurora [aircraft] can survey twice an SSK’s patrol area in a matter of hours. The CP-140’s advanced camera suite performs a comparable function to periscope cameras, capturing criminal activity at sea on film. But while submarines do not have the speed of the CP-140s, they have two qualities that CP-140s do not: stealth and endurance. Criminals could hide evidence before an aircraft or ship comes within camera range, but a submarine can loiter indefinitely and undetected. Based on these factors, the constabulary role is a viable one for Canadian submarines.⁹³

This argument may have held water in the past. But as a result of technological developments, the surveillance of non-state actors can now be done more effectively and cheaply with unmanned aerial vehicles (UAVs or “drones”). Canada already has a “Joint Uninhabited Surveillance and Target Acquisition System” (JUSTAS) program, a long-term strategy to acquire a fleet of UAVs for domestic and international operations. In March 2013, Lieutenant-General Yvan Blondin, the head of the Royal Canadian Air Force, told

the Senate Committee on National Security and Defence that UAVs are needed because they have “the range and endurance to be able to go on long patrols and be our eyes in the sky in the Arctic.”⁹⁴ Drones can fly for very long periods of time, and some surveillance models are small and quiet — characteristics that enable them, like submarines, to loiter undetected and thus capture criminal activity on film.

Training With the U.S. Navy

It is often asserted that Canada’s diesel-electric submarines play a useful role in exercises with the U.S. military, by helping our allies to train in the detection of quiet SSKs.⁹⁵ Indeed, in 2005 the House of Commons Standing Committee on National Defence and Veterans Affairs reported that some of the witnesses who appeared before it referred to “messages of support from the U.S. military for Canada’s acquisition of submarines given the possibility of their availability for training exercises with U.S. naval forces.”⁹⁶ The U.S. Navy operates a solely nuclear-powered submarine fleet, and “recognizes that diesel-electric submarines can pose a serious threat to its surface fleet, especially in littoral operations. Training exercises with foreign diesel-electric vessels are therefore considered of great value in honing the skills of the crews of patrol aircraft and surface ships.”⁹⁷ For its part, DND reports that HMCS *Corner Brook* has received high praise for acting as a simulated enemy in various NATO and Canada-U.S. exercises “to assist in the training of NATO and U.S. surface and air forces.”⁹⁸

However, the United States is capable of finding other diesel-electric submarines to train with: from 2005 to 2007, the U.S. Navy leased the HMS *Gotland* and its Swedish crew for use in anti-submarine exercises in the Pacific Ocean.⁹⁹ Moreover, as Gillis points out, “Investing over \$900 million in operating four submarines to train foreign navies is a seemingly strange allocation of money for a navy with an already narrow budget.”¹⁰⁰

Arctic Operations

During the acquisition of the Upholder/Victoria-class submarines, the Canadian Navy talked up their potential Arctic capabilities. For instance, Lt.-Cmdr. Dermot Mulholland said: “Air independent propulsion will give us the capability at some point in the future to operate for several weeks at a time without operating the air breathing engine, and that would enable us

to go under the ice.”¹⁰¹ However, at no point after the acquisition of the submarines have the Chrétien, Martin or Harper governments made a serious effort to pursue this option.¹⁰²

Nevertheless, proponents of a continued Canadian submarine capability often point to the Arctic in justification. In 2007, Defence Minister Peter MacKay said of the Victoria class: “We need to have those boats in the water for all kinds of reasons — Arctic sovereignty, protecting our coastal waters.”¹⁰³ DND itself cites the fact that HMCS *Corner Brook* took part in the annual Operation NANOOK in August 2007 and 2009¹⁰⁴ — while omitting to mention that the submarine remained in seasonally ice-free waters.

It is also true that Arctic sovereignty has featured prominently in Stephen Harper’s public statements. In 2007, the Prime Minister said: “Canada has a choice when it comes to defending our sovereignty in the Arctic: either we use it or we lose it.”¹⁰⁵ In the same speech, Harper promised up to eight ice-strengthened Arctic/Offshore Patrol Ships (A/OPS) and an Arctic refuelling station for the Canadian Navy.

However, very little has occurred with respect to the delivery of these promises. The construction contract for the A/OPS has yet to be signed and delivery of the first ship is not expected until at least 2018.¹⁰⁶ Similar delays have plagued the Arctic refuelling station, which is currently projected to open in 2016 with “a significant reduction of the site layout and function plan” that will see it “operational during the navigable (summer) season” only.¹⁰⁷

In reality, the Arctic has become an area of increased and increasing cooperation. The Cold War ended more than two decades ago and Russia is now a member of the WTO, G20, Council of Europe, and Arctic Council. In January 2010, Stephen Harper told the Secretary General of NATO that “Canada has a good working relationship with Russia with respect to the Arctic” and that “there is no likelihood of Arctic states going to war.”¹⁰⁸

Senior members of the Canadian and U.S. militaries have confirmed these views. In 2009, Canada’s then Chief of the Defence staff, General Walter Natynczyk, said: “If someone were to invade the Canadian Arctic, my first task would be to rescue them.”¹⁰⁹ In 2010, the U.S. Chief of Naval Operations, Admiral Gary Roughead, produced a memorandum on Navy Strategic Objectives for the Arctic that stated “the potential for conflict in the Arctic is low.”¹¹⁰ To the degree that security threats exist in the Arctic today, they concern non-state actors such as drug smugglers and illegal immigrants. Submarines are an expensive and inefficient response to these challenges.

Those who seek to justify a continued Canadian submarine capability on the basis of concerns about foreign submarines in the Arctic have a sig-

nificant question to answer: What has changed to increase those concerns since the Mulroney government cancelled its plan to purchase nuclear-powered submarines in 1989? In 2013, with cooperation increasing across the Arctic, it strains credibility to advance Arctic security and sovereignty as a reason for embarking on a submarine procurement when that same reasoning was not even persuasive during the Cold War.

Submarines and the Northwest Passage Dispute

Canada and the United States have long disagreed on the legal status of the Northwest Passage. The United States claims the narrowest stretches of the waterway constitute an “international strait” through which vessels from all countries may pass freely. The criteria for an international strait, according to the International Court of Justice in the 1949 *Corfu Channel Case*, are its “geographical situation as connecting two parts of the high seas and the fact of its being used for international navigation.”¹¹¹ Foreign vessels sailing through an international strait necessarily pass within 12 nautical miles of one or more coastal states, but instead of the regular right of “innocent passage” through territorial waters, they benefit from an enhanced right of “transit passage.”¹¹² This entitles them to pass through the strait without coastal state permission, while also freeing them from other constraints.

Significantly, foreign submarines may sail submerged through an international strait — something they are not permitted to do in regular territorial waters.¹¹³

Canada maintains that the Northwest Passage constitutes “internal waters.” Internal waters are *not* territorial waters and there is no right to access them without the permission of the coastal state. When foreign ships enter internal waters with permission, which is what ships do every time they enter a port in another country, their presence does not undermine the internal waters claim.

It has been publicly established that Soviet submarines entered the Northwest Passage without permission during the Cold War.¹¹⁴ However, they never threatened Canada’s legal position there, because the whole purpose of submarines is to remain covert and only overt actions can undermine or create rights under international law.¹¹⁵ The United States has also sent submarines through the Northwest Passage, beginning with the USS *Seadragon* in 1960.¹¹⁶ What is not clear is whether the United States had sought Canada’s permission for such voyages, and whether permission had been granted.

Publicly, Canada has chosen to ignore the issue of submarine transits, and total ignorance would work in Canada's favour because (as mentioned above) covert actions cannot make or change international law. However, it seems likely that Canada, as a military ally of the United States in both NATO and NORAD, has known about at least some of the U.S. submarine traffic and simply kept quiet. Such a combination of knowledge and passive acquiescence could potentially undermine Canada's legal position, were evidence of it made public, since this would establish actual non-consensual usage of the Northwest Passage by international shipping.

However, it is just as likely that the U.S. submarine traffic has taken place with Canada's consent. In 1995, then Defence Minister David Collenette was asked in the House of Commons about submarines in the Northwest Passage. He replied: "I believe we have a novel diplomatic arrangement with the United States under which they inform us of activities of their nuclear submarines under the ice, which enables us to at least say they are doing it with our acquiescence."¹¹⁷ When an opposition Member of Parliament sought to verify the statement, Collenette corrected himself: "There is no formal agreement covering the passage of any nation's submarines through Canadian Arctic waters. However, as a country that operates submarines, Canada does receive information on submarine activities from our Allies. This information is exchanged for operational and safety reasons with the emphasis on minimizing interference and the possibility of collisions between submerged submarines."¹¹⁸ A decade later, another defence minister referred to the arrangement as a "protocol." Bill Graham assured the *Globe and Mail* that the United States "would have told us" before any of their submarines transited Canadian waters.¹¹⁹ For his part, then opposition leader Stephen Harper said that, if elected prime minister, he would demand that all foreign vessels including U.S. submarines receive the permission of the Canadian government before entering Canadian waters.¹²⁰

If a bilateral agreement on submarine voyages in the Canadian Arctic Archipelago exists, it is likely modelled on the 1988 Arctic Cooperation Agreement, which in the context of voyages by U.S. Coast Guard icebreakers specifies: "nothing in this agreement...affects the relative positions of the Governments of the United States and of Canada on the Law of the Sea."¹²¹ In other words, the voyages are without prejudice to either side's position in the legal dispute. If there is no such agreement, however, and if Canada is told about the voyages without being asked for permission, that combination of knowledge and acquiescence could, again, potentially undermine its legal position — if and when the situation was ever made public. Fortun-

ately, the issue of submarine voyages remains off the table, legally speaking, as long as both Canada and the United States continue to treat these activities as officially secret — which is exactly what they seem intent on doing.

It must also be questioned whether it is only the maintenance of a submarine capability that “admits Canada to that exclusive group of states participating in regulated and highly classified submarine water space management and intelligence-sharing schemes.”¹²²

Arctic waters are cold, remote, mostly shallow, relatively uncharted, and littered with icebergs that reach deep into the sea. They are a dangerous place for any vessel, and the United States and other NATO countries therefore have a strong interest in ensuring the prompt provision of search and rescue in the event of an accident. For this reason, they will almost certainly continue to notify the Canadian Armed Forces (and probably the Coast Guard) of the presence of their submarines regardless of whether Canada also operates such vessels.¹²³ In addition, a good argument can be made that the NORAD Agreement, the scope of which was expanded in 2006 to include the sharing of maritime surveillance in the Northwest Passage and elsewhere, encompasses the sharing of information concerning the presence of submarines.¹²⁴

Risk of Conflict in the Pacific

It would be difficult to justify spending billions of dollars on submarines without identifying a risk of actual armed conflict. Canadian proponents of a continued submarine capability have done this by pointing to an increasingly powerful and assertive China.

In 2010, DND produced a major planning document entitled *Horizon 2050: A Strategic Concept for Canada's Navy*. Although the document has never been released publicly, it is widely considered to be already guiding procurement decisions.¹²⁵

The most detailed revelations of the contents of *Horizon 2050* come from Professor Elinor Sloan; it is therefore worth quoting her at length:

“Horizon 2050: A strategic concept for Canada's navy” draws attention to “the ever-latent possibility of conflict among great states,” which, in its judgement, is likely to grow. The maritime domain, it argues, will become increasingly contested over the coming years and decades, the product of a combination of several challenges. They include, among other things: demography and population growth leading to progressively urbanized coastal

areas; global demand for energy, raising issues of energy security and fueling maritime boundary disputes over energy resources on the sea bed; climate change, the impact of which is expected to be felt most strongly in littoral regions of the world; failed states incapable of implementing effective state control over coastal areas; and continued and accelerated globalization, making the ocean nodes and chokepoints of commerce especially vulnerable to disruption by a range of criminals, terrorists, and irregular forces.

One outcome of these trends, the paper argues, is that “we should anticipate the possible re-emergence of inter-state maritime armed conflict...including the possibility that certain states will seek to deny others access to their maritime approaches.” The document speaks in generalities, without reference to any specific country. Nonetheless, it is difficult not to read “China” between the lines. “Some adversaries,” it states, “will have the ability to employ more sophisticated area denial capabilities...using ‘high-end’ conventional or asymmetric capabilities such as advanced missiles or submarines.”

Against these potential challenges, Canada is not expected to be a bystander. “Horizon 2050” emphasizes that Canada “can contribute meaningfully to the joint and combined campaign with maritime forces that are prepared to wage and win the war at sea” with credible, combat-capable maritime forces to control events in contested waters, and contain or isolate conflict through contributions to coalition or alliance maritime operations.¹²⁶

But while there is no doubt that China is improving and expanding its submarine fleet,¹²⁷ it is also true that China is highly dependent on foreign markets and international trade. China, the world’s largest exporter, has been a member of the WTO since 2001.¹²⁸ Its largest trading partner is the United States, followed closely by the European Union.¹²⁹ China’s economic interdependence is further reflected by the fact that it is the second largest creditor-state in the world, after Japan, and the largest foreign creditor of the United States.¹³⁰

Since 2010, the Harper government’s trade and foreign policy has focused on the increasingly important economic relationship with China, which extends to a Foreign Investment Promotion and Protection Agreement which, once ratified, would limit the rights of the federal and provincial governments with respect to Chinese state-owned companies operating in Canada.¹³¹ Further, in 2012, Prime Minister Harper and then President Hu Jintao announced that exploratory discussions on further deepening trade and economic relations would commence following the conclusion

of an Economic Complementarities Study, and concluded a legally binding Protocol to supplement the Nuclear Cooperation Agreement designed to “facilitate the export of Canadian uranium to China.”¹³² While trade has featured heavily in Canada-China relations, agreements between the two countries have not been exclusively economic in nature. Partnerships concerning education, energy, environment, governance, and health exist on municipal, provincial and federal levels — creating further interdependence on a variety of issues.¹³³

The tension between the conflict-predicting *Horizon 2050* and this new emphasis on Canadian-Chinese cooperation may well explain why the Navy’s strategy document has not been publicly released. In the circumstances, the question needs to be asked: does Canada really want to participate in a submarine race based on speculative concerns about a country that has been embraced by the Harper government as central to our trade and foreign policy?

In our view, Professor Fen Hampson’s analysis, written in the context of the Mulroney government’s planned purchase of nuclear-powered attack submarines during the Cold War, is still largely relevant today:

The dangers of superpower entanglement are greater in the Third World, like the Middle East or Persian Gulf. Preventive diplomacy, peacekeeping, and third-party mediation can help reduce these risks. However, it is difficult to envisage what purpose nuclear-powered attack submarines would have in these situations. Moreover, if a conflict did escalate there is precious little Canada could do with or without submarines.

Resource scarcity, as opposed to military insecurity, is likely to grow in the future as world fish stocks dwindle and energy and mineral supplies become increasingly scarce. Recent problems with French, American and Spanish fishing trawlers violating Canadian waters and fishing rights are symptomatic of this trend. Instead of submarines, we need to beef up the coast guard and improve aerial reconnaissance and surveillance of our coastal waters.¹³⁴

More recently, Professor James Fergusson told the House of Commons Standing Committee on National Defence that “the argument[s] made for Canada and submarines are more driven by naval images than they are by really strategic requirements relative to available resources.”¹³⁵ According to the Committee, Fergusson “suggested that the Victoria class submarines are in fact of little use for surveillance purposes, nor did he think they could be effectively used in challenging potential adversaries.”¹³⁶

Maintaining Submarining Expertise

The final reason sometimes given for maintaining a submarine capability is that Canada would otherwise lose crucial expertise that would be difficult to rebuild if, at some point, a decision were made to re-acquire submarines.¹³⁷ However, the same argument could be made about any military equipment from cavalry horses to aircraft carriers, both of which the Canadian Forces has operated in the past. Moreover, even the purchase of readily available, off-the-shelf submarines from France or Germany would still entail a multi-year procurement process that would allow time to train experienced surface-vessel officers and crews for a submarine role.

The No-Submarine Option

IN 1995, THE editorial board of the *Globe and Mail* wrote of the proposed acquisition of the Upholder/Victoria-class submarines:

[I]f submarines are to deter attacks on Canada as part of defending territorial sovereignty, we still do not know whence these attacks will come. The government readily admits the Cold War is over, but still finds enemies on and under the sea. If, indeed, they exist, we can surely rely on the submarine capacity of our NATO allies to cover that particular flank.

... While it is true that submarines are effective in monitoring foreign fleets because they can operate in secrecy, this is using a sledgehammer to crack a peanut. The problem is not so great that planes and satellites can't handle it.

... The economic and military argument for buying submarines now is unconvincing. We cannot afford them and do not appear to need them — however attractive the price.¹³⁸

In 2004, the Danish government decided to decommission its four German-designed diesel-electric submarines.¹³⁹ According to the Danish Ministry of Defence:

The current security environment, including the enlargement of NATO and the EU, is of such a nature that the conventional military threat to the Danish territory has disappeared for the foreseeable future.¹⁴⁰

At the same time, Denmark pulled out of a Danish-Swedish joint venture to build three or four new “Viking-class” submarines.¹⁴¹

Like Canada, Denmark is a NATO country with substantial maritime zones, largely because of the Faroe Islands and Greenland. Concurrent with the decommissioning of its submarines, the Danish government increased the size and capability of its surface fleet — including new Offshore Patrol Vessels to provide inspection and fishery protection.¹⁴²

Is the Harper Government Quietly Planning to Procure New Submarines?

SEVEN YEARS AGO, the Senate Committee on National Security and Defence wrote: “The Victoria-class submarines are approaching their mid-life point. As soon as the submarines are fully operationally ready, planning for their mid-life refits and eventual replacement should begin.”¹⁴³

Despite the absence of submarines in the NSPS, there is some evidence the Harper government is quietly planning to replace the Victoria-class vessels. In May 2011, a briefing note prepared for then Chief of the Defence Staff Walter Natynczyk stated:

Submarines are the ultimate stealth platform, able to operate in areas where sea and air control is not assured, and to gain access to areas denied to other forces... A capable submarine force creates uncertainty; countering them is difficult, expensive and cannot be guaranteed.¹⁴⁴

The briefing note went on to argue that investing in submarines is prudent because “in the event of global tensions these relatively cheap assets will counter projection of power and hinder freedom of movement and action.”¹⁴⁵

In his report on the briefing note, Murray Brewster of the Canadian Press also revealed that: “Planners say the country will likely need bigger, quieter boats that can perform stealth missions, launch undersea robots and fire guided missiles at shore targets.”¹⁴⁶

In October 2011, when asked whether the Harper government might look at replacing the Victoria-class fleet with other submarines, Defence Minister Peter MacKay said that submarines provide a “very important capability for the Canadian Forces.”¹⁴⁷

Significantly, Mackay also went on to say: “Well, there was a position taken some time ago to go with diesel-electric. But you know, in an ideal world, I know nuclear subs are what’s needed under deep water, deep ice.”¹⁴⁸ Was this, perhaps, an indication that the Harper government is considering replacing the Victoria-class with nuclear-powered submarines?

In any event, MacKay pulled back from his comment the next day, saying: “We don’t live in an ideal world, so we’re not considering [nuclear power].”¹⁴⁹ Government House Leader Peter Van Loan went further, stating that there is “no plan to replace the diesel-electric fleet purchased by the Liberals.”¹⁵⁰

But in February 2012, in testimony before the Senate National Security and Defence Committee, Chief of Maritime Staff Vice-Admiral Paul Maddison said:

Assuming that Canadians will continue to see a submarine capability as a critical capability for our Canadian Forces, I would envision initiating a next-generation submarine discussion within the next three or four years, in order to go through the various procurement and project planning approval and funding gates to ensure that there is no gap in submarine capability, which is what we faced in the 1990s.¹⁵¹

There is clearly a desire within DND and the Canadian Armed Forces for the procurement of new submarines. But the absence of submarines from the NSPS remains unexplained — and, as mentioned in the introduction to this report, there are three possible explanations for this:

1. A still-secret decision has been made to acquire new submarines to replace the Victoria-class;
2. A still-secret decision has been made to terminate Canada’s submarine program when the Victoria-class submarines reach the end of their service lives;
3. The Harper government is badly mismanaging this file and, by failing to make a plan, condemning Canada’s submarine program to death through neglect and obsolescence rather than design.

Options for Renewal of the Submarine Fleet

IF CANADA DECIDES to replace the Victoria-class fleet, the options would seem to be limited to proven, foreign-designed submarines that could be built in Canada. A Statement of Operational Requirements (SOR) would have to be developed to guide the choice between the different models. Air Independent Propulsion (AIP) would likely be an essential component. Indeed, in May 2012, Chief of Maritime Staff Vice-Admiral Paul Maddison told the *Hill Times* that the Navy would, during the “next-generation submarine discussion,” look at “emerging technologies” such as air-independent propulsion and batteries.¹⁵²

AIP, which enables diesel engines to operate with an onboard oxygen supply, is hardly a new idea. The first experiments with the concept occurred before the Second World War, using hydrogen peroxide as the oxidant.¹⁵³ During the Cold War, the Soviets experimented with AIP using liquid oxygen.¹⁵⁴ As mentioned above, Canada talked about installing AIP on the Victoria-class submarines,¹⁵⁵ but ultimately decided against doing so for cost-saving reasons.¹⁵⁶

There are a number of different AIP technologies in use or under development in Western navies, from liquid oxygen to ethanol to fuel cells. AIP submarines are best built with the capability included, rather than retrofitted later.¹⁵⁷ And the three most likely options available to Canada can all have AIP incorporated during the construction phase.

Scorpene Class

The Scorpene-class submarine was designed by France's DCNS (formerly DCN) and Spain's Navantia (formally Bazan, then Izar).¹⁵⁸ A proven design, the Scorpene class is currently in service in the French Navy and is being bought by other countries, including Chile, Malaysia, Brazil and India.¹⁵⁹ Moreover, it is being built in the purchasing countries. India, for instance, is building six Scorpene-class submarines at a state-owned shipyard with technical assistance and equipment from DCNS and Thales.¹⁶⁰

The Scorpene class has a top speed of 20 knots submerged and a diving depth of around 350 metres.¹⁶¹ They have a range of 6500 nautical miles (12,000 km)¹⁶² and with the additional of an AIP system, incorporated during the construction phase, can remain submerged for up to three weeks.¹⁶³ The Scorpene class requires a crew of just 31, significantly fewer than the Victoria class with 48.¹⁶⁴

As with any naval ship, the cost of the Scorpene class depends on the equipment and armaments placed on board. Options such as AIP and advanced sonar systems can push the price up significantly. Malaysia paid about \$390–\$400 million for each of its Scorpenes, Chile paid \$520–\$530 million, and India paid \$950–\$970 million.¹⁶⁵

U-214

Germany's U-214 submarine is the export version of the U-212.¹⁶⁶ A product of Howaldtswerke-Deutsche Werft GmbH (HDW), it has been purchased by Portugal, Greece, South Korea and Turkey.¹⁶⁷ Although the first of the Greek U-214s was built in Germany, like the Portuguese submarines, the two remaining submarines were built in Greece.¹⁶⁸ The first of South Korea's U-214s were assembled in South Korea by Hyundai Heavy Industries, while the next batch will be built there by Daewoo Shipbuilding & Marine Engineering.¹⁶⁹ The Turkish U-214s are being "co-produced" in Germany and Turkey.¹⁷⁰

The U-214 has a maximum speed of 20 knots,¹⁷¹ a maximum depth of about 400 metres,¹⁷² and a range of 10,420 nautical miles (19,300 km).¹⁷³ An AIP system based on Siemens' Polymer Electrolyte Membrane (PEM) fuel cell technology provides a submerged endurance of two weeks.¹⁷⁴ Like the Scorpene class, the U-214's crew of 27 is significantly smaller than that of Canada's Victoria class.¹⁷⁵

The U-214 lacks the non-magnetic steel hull that makes the U-212 (the non-export version) impossible to detect using a Magnetic Anomaly Detec-

tor. If Canada were to purchase the German-designed submarine, it might wish to negotiate for the inclusion of the non-magnetic technology. The cost of a U-212, with the non-magnetic hull, is around \$500 million.¹⁷⁶

Gotland Class

The Gotland class is built by Kockums, a subsidiary of ThyssenKrupp Marine Systems.¹⁷⁷ Commissioned into the Royal Swedish Navy in 1996, the three submarines have a top speed of 20 knots and a Stirling-engine based AIP system that uses the surrounding seawater as a heat sink.¹⁷⁸ Their range and maximum depth have not been published.

A Gotland-class submarine with AIP has a crew of 25¹⁷⁹ and costs about \$365 million.¹⁸⁰

Conclusion

LURKING BENEATH THE surface of the National Shipbuilding Procurement Strategy (NSPS) is an implied and perhaps imminent procurement: namely, the replacement of Canada's troubled Victoria-class submarines.

The best-before date of Canada's Victoria-class submarines is approaching: perhaps as soon as 2023, and probably no later than 2030 — in other words, well within the 2041 end-date of the NSPS. Yet there is no mention of submarines in that document.

Moreover, the procurement of naval vessels in Canada currently takes more than a decade from initial decision to actual delivery, with the Arctic/Offshore Patrol Ships taking at least 11 years and the Joint Support Ships taking at least 14 years.¹⁸¹

The Department of National Defence is clearly hoping to continue Canada's submarine capability by replacing the current fleet. The Navy's most recent strategic plan, *Horizon 2050*, foresees a world where submarines will still be needed. Although *Horizon 2050* has not yet been released publicly, Defence Minister Peter MacKay seems to support it — and the acquisition of new submarines.

For these reasons, the question of whether Canada actually requires submarines needs to be addressed and resolved. For if the answer is “no,” a phase-out of the current fleet should be initiated before any more tax dollars are wasted. If the answer is “yes,” a competitive procurement process should begin immediately, since it will take a decade or more to build the

replacements — which, for reasons of risk-avoidance and fiscal responsibility, should be based on a proven in-service design.

If no action is taken — either to phase out Canada’s submarine capability, or to initiate the procurement of new submarines — Canadians will either waste additional money on an unnecessary capability, or experience a “submarine gap” where a capability that has been deemed necessary simply is not present.

Canada’s Victoria-class submarines may have as little as one decade of remaining service-life, and too many mistakes have been made with submarine procurements in the past. This time, there has to be a plan: one that is subject to public examination and debate before it is implemented.

Significant Questions

THE PRECARIOUS SITUATION of Canada's Victoria-class submarines raises a number of significant questions that go to the heart of the Harper government's management of defence procurement:

Question #1

With the lifespan of the Victoria class not extending beyond 2030, why were replacement submarines not included in the National Shipbuilding Procurement Strategy, which extends until 2041? The answer cannot be that any new submarines would not be built in Canada, since two of the available options are already being built in the countries that have purchased them.

Question #2

Does the Harper government have a plan for procuring new submarines that it has failed to communicate to taxpayers?

Question #3

If the Harper government does not have a plan for procuring new submarines, does this mean that it has decided to end Canada's submarine program when the Victoria class reaches the end of its lifespan? Or will that outcome be allowed to occur without a formal decision being taken?

Question #4

If the Harper government does not have a plan for procuring new submarines, but believes that Canada requires submarines in the long term, does this mean that it is prepared to accept a “submarine gap,” i.e., a period without operational submarines, given that any submarine procurement would take at least 10 years and quite possibly much longer?

Question #5

If the Harper government believes that Canada requires submarines in the long term, why did it sign a \$1.5 billion contract to refit, repair and maintain the Victoria-class fleet — in order to obtain at most 15 years of service, when the same amount of funding would have purchased 3–4 brand new state-of-the-art submarines?

Question #6

If the Harper government does not believe that Canada requires submarines in the long term, why did it sign a \$1.5 billion contract to refit, repair and maintain the Victoria-class fleet?

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